

CLAIMS

What is claimed is:

1. A coordinative dental-die-interlocking system comprising:

a dental-die pin having a tooth-anchor portion and a sleeve-insertion portion;

the tooth-anchor portion of the dental-die pin being anchored rigidly in a tooth-die base;

the sleeve-insertion portion of the dental-die pin being inserted removably in a die-pin sleeve that is anchored rigidly in a dental-model base;

the sleeve-insertion portion of the dental-die pin including one or more guide projections that fit predeterminedly intermediate guide walls on the die-pin sleeve;

a pin taper on a predetermined outside peripheral portion of the dental-die pin;

a sleeve taper on a mating inside peripheral portion of the die-pin sleeve;

the pin taper and the sleeve taper being tapered reciprocally for snugging insertion of the pin taper in the sleeve taper,

a plurality of sizes of die-pin sleeves which include a separate size of die-pin sleeve for each of a plurality of teeth sections of the dental-model base;

a plurality of sizes of dental-die pins which include a separate size of dental-die pin for each of the plurality of sizes of the die-pin sleeves;

the plurality of die-pin sleeves including sleeve-identification markings;

the plurality of dental-die pins including pin-identification markings for matching of the pin-identification markings with the sleeve-identification markings to mate the dental-die pins with the die-pin sleeves predeterminedly; and

24 a pin lock in predetermined locking communication intermediate the
25 dental-die pin and the die-pin sleeve.

1 2. The coordinative dental-die-interlocking system of claim 1 wherein:
2 the pin-identification markings and the sleeve-identification markings are
3 color-coded with predetermined colors on predetermined portions thereof that are
4 visible when the die-pin sleeve and the dental-die pin are separated.

1 3. The coordinative dental-die-interlocking system of claim 1 wherein:
2 the plurality of sizes of the die-pin sleeves include a first sleeve size for
3 anterior portions of dental-model bases, a second sleeve size for posterior portions
4 of dental-model bases, and a third sleeve size for intermediate portions of dental-
5 model bases;

6 the plurality of sizes of the dental-die pins include a first pin size for
7 anterior teeth, a second pin size for posterior teeth and a third pin size for
8 intermediate teeth;

9 the first pin size and the first sleeve size being a first die pair;

10 the second pin size and the second sleeve size being a second die pair;

11 and

12 the third pin size and the third sleeve size being a third die pair.

1 4. The coordinative dental-die-interlocking system of claim 1 wherein:
2 the pin lock includes a pin lock recess that is predeterminedly aligned
3 with a sleeve lock recess in the die-pin sleeve; and
4 an expansion-tensioned locking member is extended intermediate the pin
5 lock recess and the sleeve lock recess.

1 5. The coordinative dental-die-interlocking system of claim 4 wherein:

2 the pin lock recess includes a pin groove that is extended
3 circumferentially about an outside periphery of the dental-die pin proximate a major
4 diameter of a pin-lock taper; and

5 the sleeve lock recess includes a sleeve groove that is/extended
6 circumferentially about an inside periphery of the die-pin sleeve proximate a major
7 diameter of a sleeve-lock taper;

1 6. The coordinative dental-die-interlocking system of claim 5 wherein:

2 the pin lock includes an expansion-tensioned member that is situated
3 predeterminedly in the pin groove and in the sleeve groove.

1 7. The coordinative dental-die-interlocking system of claim 6 wherein:

2 the expansion-tensioned member includes a circular cross section.

1 8. The coordinative dental-die-interlocking system of claim 7 wherein:

2 the sleeve groove includes an entry-side wall that is predeterminedly
3 proximate an insertion-side wall of the pin groove while the pin-lock taper is
4 bottomed in the sleeve taper and while the expansion-tensioned member is in the
5 sleeve groove and in the pin groove simultaneously.

1 9. The coordinative dental-die-interlocking system of claim 8 wherein:

2 the expansion-tensioned member includes a resilient toroid.

1 **10.** The coordinative dental-die-interlocking system of claim 8 wherein:
2 the expansion-tensioned member includes a coil spring that is bent
3 circumferentially into a toroidal shape intermediate proximately positioned ends of
4 the coil spring to provide circumferentially side-tensioned resilience.

1 **11.** The coordinative dental-die-interlocking system of claim 1 wherein:
2 the pin taper and the sleeve taper have taper angles that are
3 predeterminedly less than fifteen degrees from being parallel with an axis of the
4 dental-die pin for resisting separation of the dental-die pin from the die-pin sleeve
5 from side pressure on the dental-die pin.

1 **12.** The coordinative dental-die-interlocking system of claim 11 and further
2 comprising:
3 a pry-wrench slot intermediate a base wall of a dental die on the dental-
4 die pin and the dental-model base.

1 **13.** The coordinative dental-die-interlocking system of claim 1 wherein:
2 the one or more guide projections include an arcuate ridge; and
3 the one or more guide walls include walls of an arcuate groove.

1 **14.** The coordinative dental-die-interlocking system of claim 1 wherein:
2 the one or more guide projections include a straight-wall ridge having
3 straight opposite walls; and
4 the one or more guide walls include a straight-wall groove having straight
5 opposite walls.

1 **15.** The coordinative dental-die-interlocking system of claim **14** wherein:
2 the straight-wall ridge of the one or more guide projections includes a
3 polygonal projection.

1 **16.** The coordinative dental-die-interlocking system of claim **1** and further
2 comprising:
3 a pin extension of the dental-die pin extended removably into a sleeve
4 extension of the die-pin sleeve.

1 **17.** The coordinative dental-die-interlocking system of claim **1** wherein:
2 the pin taper is on an outside periphery of a polygonal extension of the
3 dental-die pin from proximate a sleeve side of the dental-die pin;
4 the sleeve taper is on an inside periphery of a polygonal portion of the
5 die-pin sleeve that is proximate an entrance to the die-pin sleeve; and
6 the sleeve taper matches the pin taper.

1 **18.** The coordinative dental-die-interlocking system of claim **17** wherein:
2 the pin taper has predeterminedly less than seven degrees of taper angle
3 inwardly from an axis of the dental-die pin in a direction opposite from the tooth-
4 anchor portion of the dental-die pin; and
5 the sleeve taper has reciprocally less than seven degrees of taper angle
6 outwardly from an axis of the die-pin sleeve in a direction opposite from the dental-
7 model base.

1 **19.** The coordinative dental-die-interlocking system of claim **18** and further
2 comprising:

3 a pry-wrench slot having slot walls that are orthogonal intermediate a pin
4 wall of the dental-die pin and a sleeve wall of the die-pin sleeve; and

5 the pry-wrench slot includes an inside periphery that is articulated to
6 receive a predetermined polygonal-wrench rod for rotational prying to loosen the
7 dental-die pin from the die-pin sleeve.

1 **20.** The coordinative dental-die-interlocking system of claim **18** and further
2 comprising:

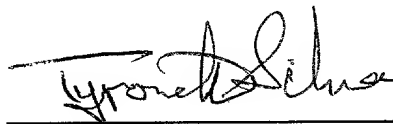
3 a circumferential ring-grasp extension of the polygonal extension of the
4 dental-die pin;

5 the ring-grasp extension having a predeterminedly slight taper in a
6 direction opposite from the polygonal extension;

7 a lock ring in a lock-ring groove in an inside periphery of a lock-ring
8 wall of the die-pin sleeve that surrounds the ring-grasp extension; and

9 the lock ring having an inside edge with predetermined tightness of
10 grasping contact with the ring-grasp extension.

INVENTOR



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